APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,303	11/07/2001	Philipp Harald Nagel	6474	4511

7590   07/21/2006

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EXAMINER
TRAN, DALENA

ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/037,303	NAGEL, PHILIPP HARALD
	Examiner	Art Unit	
	Dalena Tran	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>10 July 2006</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *6-8 and 14-16* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *6-8 and 14-16* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/31/06*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Notice to Applicant(s)

1.   This office action is responsive to the amendment filed on 7/10/06. As per request,

claims 6-8, and 14-16 have been amend. Claims 1-5, 9-13, and 17 have been cancelled. Thus,

claims 6-8, and 14-16 are pending.

The prior art submitted on 3/31/06 has been considered.

The allowance of claims 6-8, and 14-16 in the last office action is withdrawn.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 6-8, and 14-16, are rejected under 35 U.S.C.103(a) as being unpatentable over

Meek et al. (6,366,927) in view of Chojnacki et al. (6,366,851), Gudat et al. (5,610,815), and

Yamamoto et al. (6,438,494).

As per claims 6 and 14, Meek et al. disclose a vehicle navigation system that receives

sensor data from a plurality of sensors, and provides a map image that is presented on a display,

system comprising: a navigation map data memory that includes map data indicative of

roadways stored geographic features that are other than straight form (see at least the abstract;

columns 3-4, lines 20-57; columns 7-8, lines 21-58; figure 10; and column 9, lines 20-64), and a

navigation processing unit that receives the sensor data, and requests map data from navigation

map data memory associated with the sensor data, and computes the map image from map data

(see columns 1-3, lines 13-4; and columns 3-4, lines 21-17). Meek et al. disclose roadways

stored geographic features that are other-than-straight form, for example, Bezier curve. Bezier

curve is a curve generated by a computable function, represented by polynomial equations.

Meek et al. do not explicitly disclose a cornu spiral (clothoid) curve. However, cornu spiral is a

curve also generated by a computable function, represented by polynomial equations, and there

are other ways to represent other-than-straight road segments; some of these other ways to

represent other-than-straight road include clothoid curve. To modify for the teach of Meek

et al., Chojnacki et al. disclose other ways to represent other-than-straight road include clothoid

curve (see columns 27-28, lines 44-23). Both Meek et al., and Chojnacki et al. disclose the

advantage for storing roadway data to represent other-than-straight road segments is to increase

the level of accuracy of the geographic database (see Meek et al., column 6, lines 20-30; and

Chojnacki et al., column 27, lines 36-43).

Meek et al., and Chojnacki et al. do not disclose Cornu spiral polynomial coefficients. However,

Gudat et al. disclose navigation processing unit computes map image using Cornu spiral

polynomial coefficients stored in navigation map data memory, and terms of polynomials of the

unit Cornu spiral are stored in navigation map data memory and map image is computed using

terms of polynomials of the unit Cornu spiral (see at least columns 10-11, lines 40-18; columns

31-32, lines 49-49; and columns 35-37, lines 54-21).

Gudat et al. do not explicitly disclose Taylor series. However, it is well known in the art as

disclose in Yamamoto et al. ('494) that the polynomials of the unit Cornu spiral are associated

with Taylor series expression (see '494, columns 2-3, lines 62-67).

Meek et al., and Chojnacki et al. do not disclose the cornu spiral is of the form $1 = Ka^2$.

However, Chojnacki et al. disclose clothoid curve (columns 27-28, lines 44-23). Also, it would

have been well known in the art, as disclose in Yamamoto et al. ('494), that a clothoid curve

(Cornu spiral) is a curve whose curvature is directly proportional to its arc length (see '494, at

least column 1, lines 22-23). Also, as current invention, applicant disclose in specification page

4, line 20, parameter value "a = 1". Therefore, form: $1 = Ka^2$, if (a = 1), then $1 = K$, therefore,

curvature is directly proportional to its arc length. This is well known in the art as just discussed

above in Yamamoto et al. (at least column 1, lines 22-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made

to implement the teach of Meek et al. by combining geographic features that are other-than-

straight form to include a cornu spiral form, for accurately store a different shapes curvature

transition curves represent rivers or curve roads of geographic features, in order to provide a high

level of accuracy in the geographic database; also, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to modify the teach of Meek et al. by

combining computes map image using Cornu spiral polynomial coefficients stored in navigation

map data memory, and terms of polynomials of the unit Cornu spiral are stored in navigation

map data memory and map image is computed using terms of polynomials of the unit Cornu

spiral associated with Taylor series for accurately determine a Cornu spiral form of roadways

and provide an accurate map image; and it would have been obvious to one of ordinary skill in

the art at the time the invention was made to modify the teach of Meek et al. by combining arc

length and curvature form of the cornu spiral to generate curvature transition curves of the roads

using the clothoid (cornu spiral) curve.

As per claims 7-8 and 15-16, Meek et al. disclose a vehicle navigation system that

receives sensor data from a plurality of sensors, and provides a map image that is presented on a

display, system comprising: a navigation map data memory that includes map data indicative of

roadways stored geographic features that are other than straight form (see at least the abstract;

columns 3-4, lines 20-57; columns 7-8, lines 21-58; figure 10; and column 9, lines 20-64), and a

navigation processing unit that receives the sensor data, and requests map data from navigation

map data memory associated with the sensor data, and computes the map image from map data

(see columns 1-3, lines 13-4; and columns 3-4, lines 21-17). Meek et al. disclose roadways

stored geographic features that are other-than-straight form, for example, Bezier curve. Bezier

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curve also generated by a computable function, represented by polynomial equations, and there

are other ways to represent other-than-straight road segments; some of these other ways to

represent other-than-straight road include clothoid curve.   To modify for the teach of Meek

et al., Chojnacki et al. disclose other ways to represent other-than-straight road include clothoid

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Chojnacki et al., column 27, lines 36-43).

Meek et al., and Chojnacki et al. do not disclose Cornu spiral polynomial coefficients. However,

Gudat et al. disclose navigation processing unit computes map image using Cornu spiral

polynomial coefficients stored in navigation map data memory, and terms of polynomials of the

unit Cornu spiral are stored in navigation map data memory and map image is computed using

terms of polynomials of the unit Cornu spiral (see at least columns 10-11, lines 40-18; columns

31-32, lines 49-49; and columns 35-37, lines 54-21), and the navigation map data memory

includes coordinates of the unit Cornu spiral stored in a table, from which the Cornu spirals of

the navigation map are derived for roads, railroad lines, rivers, lakes, and similar cartographic

parameters defined as Cornu spirals (see columns 36-37, lines 10-21).

Gudat et al. do not explicitly disclose Taylor series. However, it is well known in the art as

disclose in Yamamoto et al. ('494) that the polynomials of the unit Cornu spiral are associated

with Taylor series expression (see '494, columns 2-3, lines 62-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made

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transition curves represent rivers or curve roads of geographic features, in order to provide a high

level of accuracy in the geographic database; also, it would have been obvious to one of ordinary

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combining computes map image using Cornu spiral polynomial coefficients stored in navigation

map data memory, and terms of polynomials of the unit Cornu spiral are stored in navigation

map data memory and map image is computed using terms of polynomials of the unit Cornu

spiral associated with Taylor series for accurately determine a Cornu spiral form of roadways

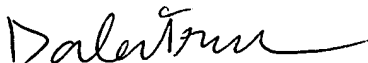and provide an accurate map image.

Remarks

4.   Applicant's amendment filed on 7/10/06 has been fully considered. Upon updated

search, and reviewing all the references cited, Yamamoto et al. reference is still considering the

relevant art, therefore, the updated ground of rejection has been set forth as above.

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dalena Tran whose telephone number is 571-272-6968. The

examiner can normally be reached on M-F 6:30 AM-4:00 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent Examiner
Dalena Tran

July 18, 2006